# (19) World Intellectual Property Organization International Bureau



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### (43) International Publication Date 26 May 2005 (26.05.2005)

#### PCT

## (10) International Publication Number WO 2005/047315 A2

(51) International Patent Classification7:

C07K 14/025

(21) International Application Number:

PCT/US2004/037372

(22) International Filing Date:

10 November 2004 (10.11.2004)

(25) Filing Language:

English

(26) Publication Language:

English

(30) Priority Data:

60/519,211

12 November 2003 (12.11.2003) U

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- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

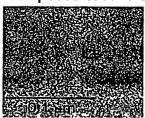
#### Published:

 without international search report and to be republished upon receipt of that report

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

(54) Title: OPTIMIZED EXPRESSION OF HPV 58 L1 IN YEAST

#### Transmission EM of VLPs Composed of HPV 58 L1 R Protein Molecules



(57) Abstract: Synthetic DNA molecules encoding the HPV58 L1 protein are provided. Specifically, the present invention provides polynucleotides encoding HPV58 L1 protein, wherein said polynucleotides are codon-optimized for high level expression in a yeast cell. The synthetic molecules may be used to produce HPV58 virus-like particles (VLPs), and to produce vaccines and pharmaceutical compositions comprising the HPV58 VLPs. The vaccines of the present invention provide effective immunoprophylaxis against papillomavirus infection through neutralizing antibody and cell-mediated immunity and are also useful for treatment of existing HPV infections.